

1. (CURRENTLY AMENDED) An apparatus comprising:

an input circuit configured to generate a plurality of data paths in response to an input data signal having a plurality of data items sequentially presented in a first order;

a storage circuit configured to store each of said data paths in a respective shift register chain; and

an output circuit configured to generate an output data signal in response to each of said shift register chains, wherein (i) said output data signal presents said data items in a second order different from said first order, and (ii) a first group of said shift register chains having a first number of registers is configured to have a first delay, and a second group of said shift register chains having a second number of registers different from said first number of registers is configured to have a second delay and a third group of shift register chains having said second number of shift registers is configured to have said second delay, (iii) said input circuit transfers said input data to said shift register chains according to a first shift order and said output circuit reads said output data from said shift register chains according to a second shift order different from said first shift order, (iv) said configuration of said shift register chains is configured to enable said output circuit to present said data in said second order while generating a delay less than a total number

of said plurality of shift register chains, and (v) said second order comprises an interleaved order.

2. (CANCEL).

3. (ORIGINAL) The apparatus according to claim 1, wherein said second order comprises a sequential presentation of said plurality of data items.

4. (ORIGINAL) The apparatus according to claim 1, wherein said input circuit comprises a demultiplexer circuit.

5. (ORIGINAL) The apparatus according to claim 1, wherein said output circuit comprises a multiplexer circuit.

6. (ORIGINAL) The apparatus according to claim 1, wherein said input circuit is controlled by a finite state machine.

7. (PREVIOUSLY PRESENTED) The apparatus according to claim 6, wherein said output circuit is controlled by said finite state machine.

8. (ORIGINAL) The apparatus according to claim 1,
wherein each of said data paths is configured to have a
propagation delay.

9. (CURRENTLY AMENDED) An apparatus comprising:
means for generating a plurality of data paths in
response to an input data signal having a plurality of data
5 items sequentially presented in a first order;
means for storing each of said data paths in a
respective shift register chain; and
means for generating an output data signal in response
to each of said shift register chains, wherein (i) said output
10 data signal presents said data items in a second order different
from said first order, and (ii) a first group of said shift
register chains having a first number of registers is configured
to have a first delay, and a second group of said shift register
chains having a second number of registers different from said
15 first number of registers is configured to have a second delay
and a third group of shift register chains having said second
number of shift registers is configured to have said second
delay, (iii) said input data is transferred to said shift
register chains according to a first shift order and said output
20 data is read from said shift register chains according to a
second shift order different from said first shift order, (iv)

said configuration of said shift register chains is configured
to enable said output circuit to present said data in said
second order while generating a delay less than a total number
25 of said plurality of shift register chains, and (v) said second
order comprises an interleaved order.

10. (CURRENTLY AMENDED) A method for re-ordering data comprising the steps of:

30 (A) generating a plurality of data paths in response to an input data signal having a plurality of data items sequentially presented in a first order;

(B) storing each of said data paths in a respective shift register chain; and

35 (C) generating an output data signal in response to each of said shift register chains, wherein (i) said output data signal presents said data items in a second order different from said first order, and (ii) a first group of said shift register chains having a first number of registers is configured to have a first delay, and a second group of said shift register chains having a second number of registers different from said first number of registers is configured to have a second delay and a third group of shift register chains having said second number of shift registers is configured to have said second delay,
40 a first delay, and a second group of said shift register chains having a second number of registers different from said first number of registers is configured to have a second delay and a third group of shift register chains having said second number of shift registers is configured to have said second delay,
45 (iii) said input data is transferred to said shift register

chains according to a first shift order and said output data is read from said shift register chains according to a second shift order different from said first shift order, (iv) said configuration of said shift register chains is configured to enable said output circuit to present said data in said second order while generating a delay less than a total number of said plurality of shift register chains, and (v) said second order comprises an interleaved order.

11. (CANCEL).

12. (ORIGINAL) The method according to claim 10, wherein said second order comprises a sequential presentation of said plurality of data items.

13. (ORIGINAL) The method according to claim 10, wherein step (A) generates said data paths using a finite state machine.

14. (ORIGINAL) The method according to claim 13, wherein step (C) generates said output data signal using said finite state machine.

15. (PREVIOUSLY PRESENTED) The method according to
claim 10, wherein each of said data paths is configured to have
a propagation delay.

16. (CURRENTLY AMENDED) An apparatus comprising:
an input circuit configured to generate a plurality of
data paths in response to an input data signal having a
plurality of data items sequentially presented in a first order;

5 a storage circuit configured to store each of said
data paths in a memory; and

an output circuit configured to generate an output
data signal in response to said memory, wherein (i) said output
data signal presents said data items in a second order different
10 from said first order, and (ii) a first group of said paths
having a first number of registers is configured to have a first
delay, and a second group of said paths having a second number
of registers different from said first number of registers is
configured to have a second delay and a third group of said

15 paths having said second number of registers is configured to
have said second delay, (iii) said input circuit transfers said
input data to said data paths according to a first shift order
and said output circuit reads said output data from said data
paths according to a second shift order different from said
20 first shift order, (iv) said configuration of said data paths is

configured to enable said output circuit to present said data in
said second order while generating a delay less than a total
number of said plurality of data paths, and (v) said second
order comprises an interleaved order.

17. (PREVIOUSLY PRESENTED) The apparatus according to
claim 1, wherein said first delay is generated in response to a
first particular number of shift registers and said second delay
is generated in response to a second particular number of shift
5 registers.